

Conclusion: To our best knowledge, this was the first multi-centered in this field, and also the first study of its kind in the locality. Expanding the existing body of evidence, this retrospective observational study demonstrated that echocardiographic and clinical improvements after ASD occlusion are significant even if it is done after the age of 60. These improvements on pulmonary hypertension, RV dilation, and subjective symptoms were achieved to a similar magnitude in both age groups. The procedure can be safely performed in these geriatric patients and the incidences of complications such as new onset atrial arrhythmias were not different from the younger age group. Thromboembolism or bleeding complications are rare, and were not recorded in the older age group in this study. ASD occlusion should therefore be recommended to eligible patients, even after the age of 60.

TCTAP A-057

The Predictors of Atrial Septal Defect Occluder Dislodgement - A Comparative Study Between Adult and Children

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Background: Percutaneous device closure for atrial septal defects (ASDs) has emerged as an alternative to traditional surgical closure. There are still many concerns about the adverse events during procedure such as ASD occluder dislodgement. However, information about the predictors of ASD occluder dislodgement remained limited. The objective was to determine the predictors for ASD occluder dislodgement for adult and children patients in our hospital.

Methods: From June 2003 to June 2013, 115 adults and 98 children patients were diagnosed with ASD and offered transcatheter closure of their defects using atrial septal occluder (ASO). The ASO was implanted under transesophageal echocardiography (TEE) guidance.

Results: The ASO dislodgement rate was 4.7% (10/213). In the population of dislodgement, seven cases were adult and three were children. The patient was then referred to surgery if ASO dislodged. The thicker the least thickness of any rim was, the more the ASO dislodged ($p < 0.005$). The least rim thickness of 3×1.88 mm had the best sensitivity and specificity using receiver operating characteristic (ROC) curve analysis ($p = 0.026$). The correction of the least thickness of any rim by body surface area (BSA) was also found to present statistical significance in adults and children. The results of multivariate analysis demonstrated that high Qp/Qs, floppy or erosion rim post-implantation and the least rim thickness were independent predictors for ASO dislodgement ($p < 0.05$).

Conclusion: Percutaneous device closure of atrial septal defects (ASDs) is safe and effective at current era. Qp/Qs, the least rim thickness and floppy and erosion of the rim could predict ASO dislodgement.

TCTAP A-058

Stent Fenestration of the Atrial Septum in Patients with Idiopathic Pulmonary Hypertension

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Background: Pulmonary arterial hypertension is characterized by a progressive increase of pulmonary vascular resistance and ultimately leads to the development of right ventricular failure. Natural course of the idiopathic pulmonary hypertension is malignant, and from the moment of establishing the diagnosis, without administering specific drug therapy, is less than 3 years. It is proved that the presence of the foramen ovale in patients with primary pulmonary hypertension improves the prognosis of the disease and increases the life span.

Methods: 42 patients with primary pulmonary hypertension underwent transcatheter creation of the interatrial septum fenestration through stenting in The Bakoulev Scientific Center for Cardiovascular Surgery (Bakoulev CCVS). The age of the patients ranged from 5 to 44 years (average 16.2 ± 7.8). 20 patients had III heart failure functional class, 22 patients had IV functional class. The systolic pressure in the pulmonary artery ranged from 80 to 188 mmHg (average 105 ± 45), in the right atrium - from 10 to 18 (average 15 ± 2) while the oxygen saturation of the arterial blood ranged from 88% to 94% (average $90 \pm 2\%$). All interventions were performed under general anesthesia and transesophageal echocardiographic control. In 28 cases hourglass-type stenting of the interatrial septum fenestration (ISF) was performed with the Palmaz Balloon-Expandable Stents of 27.0 and 36.0 length. In 12 cases stenting without modification of the stent was performed with 6-7 mm diameter and 3-4 cm length peripheral stents.

Results: In 95.3% of cases interventions and creation of the ISF from 5.0 to 8.0 mm in diameter were successfully performed. ISFs were created with the diameter of 5.0 mm in 15 patients, of 6.0 mm - in 21 patients, and of 8.0 mm - in 4 patients. Increase in the pulmonary artery systolic pressure on the average from 105 ± 45 to 125 ± 40 with a slight decrease in oxygen saturation of the arterial blood (90 ± 2 to $89 \pm 2\%$) was observed in all patients immediately after the intervention.

In a long-term period 33 patients were examined within the period from 5 months to 8 years (average 31.3 ± 14.2 months). Improvement in the clinical condition and quality of life of the patients is observed in most cases. Thus, 17 patients were reclassified to II functional class, 11 patients - to III functional class, and 2 patients - to IV functional class. At the same time an increase from 163 ± 54 to 294 ± 38 m is observed according to the 6-minute walk test results. Long-term mortality was 9.1% ($n = 3$).

Conclusion: Stent fenestration of the interatrial septum in patients with idiopathic pulmonary arterial hypertension improves the quality of life of patients, besides, it allows increasing the patient's life span, and it can be a bridge to lung or heart-lung transplantation.

TCTAP A-059

Plasma Level of Secretory Type II Phospholipase A2 Is Pathophysiologically Associated with Pulmonary Artery Pressure in Congenital Atrial Septum Defect Subjects

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Background: Patients with an atrial septum defect (ASD) tend to develop progressive pulmonary arterial hypertension (PAH). Recent studies showed that a secretory phospholipase A₂ (sPLA₂) inhibitor could rescue PAH by acting on ion channel activity. We aimed to survey the changes of sPLA₂ and its association with PAH after the percutaneous closure device intervention on ASD patients.

Methods: Patients with diagnosis of ASD and admitted to our hospital for the procedure of ASD occluder procedure were consecutively enrolled in our study. Hemodynamic parameters, novel biomarkers, including sPLA₂, and echocardiographic studies were performed before and after implantation of the closure device for ASD. PAH was measured both from catheterization monitor and echocardiographic measurement.

Results: Forty-two ASD (88.1% female) patients, mean age of 40.7 ± 18.5 years, were enrolled in this study and compared with another sex-age-matched control group ($n = 40$). The mean PA pressure of ASD patients was 35.1 ± 7.6 (16 to 81) mmHg. Compared with the control subjects, ASD patients had higher level of sPLA₂ (274 ± 44 vs. 172 ± 13 ng/dl, $p < 0.01$). The age, ASD size, and PA pressure were all positively correlated with sPLA₂ level (all $p < 0.05$); with PA pressure had the most significant correlation. ASD patients with PAH had higher sPLA₂ than those without (298 ± 32 vs. 230 ± 22 ng/dl, $p < 0.02$). After ASD occlude procedure, the level of sPLA₂ decreased significantly among those with baseline PAH subgroup ($\Delta = -120 \pm 22$ ng/dl, $p < 0.01$), but not without PAH subgroup ($\Delta = -43 \pm 20$ ng/dl, $p = 0.09$). However, the sPLA₂ levels were similar in both groups after procedure ($p = 0.42$). Furthermore, the change of sPLA₂ was also strongly associated with the decreased level of PAH after procedure ($R = 0.45$, $p = 0.002$).

Conclusion: Our results support the findings that sPLA₂ is crucial in PAH under ASD condition and has a both therapeutic and pathophysiologic role for further treatment strategy.

TCTAP A-060

Simultaneous Endovascular Correction of ASD and Coronary Lesions in Adults with Congenital and Coronary Heart Diseases

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Background: ASD secundum in adults is often associated with coronary heart disease. Meanwhile there is no commonly adopted tactics for the treatment of such patients: should it be simultaneous or staged?

Methods: 55 patients underwent endovascular ASD closure, in 5 of them (8.6%) this procedure was combined with simultaneous coronary stenting. The average age of these patients was 63.2 ± 7.0 years. Two patients had history of MI. All patients had clinical signs of coronary heart disease and heart defect (including migraine-like pain in 2 cases). Average SYNTAX score was 11.9 ± 6.3 . The average number of implanted stents per patient was 2.0 ± 1.0 . The average time of fluoroscopy was 19.4 ± 9.5 min, the average volume of contrast medium used- 205.8 ± 65.9 ml. The average size of ASD assessed by TEE was 12.8 ± 2.9 mm.

Results: At first we performed coronary stenting followed by ASD closure with an occluder. Technical success rate was 100%. Five ASD occluders (mean diameter 21.8 ± 8.1 mm) were implanted in 5 patients. Complete ASD closure immediately after occluder implantation was noted in 5 (100%) cases. Coronary stenting was performed in all cases, in 2 patients - after successful recanalization of chronic occlusion. Early postoperative period was uneventful. At control examination (average - 13.5 ± 1.5 months) complete defect closure persisted in all patients. At TEE, the RA volume decreased from 48.6 ± 5.6 to 32.6 ± 3.8 cm³ ($p < 0.01$), the RV volume - from 43 ± 6.1 to 32.4 ± 4.8 cm³ ($p < 0.01$), mean PAP decreased from 45.4 ± 11.3 to 25.6 ± 6.8 mm Hg ($p < 0.01$). Preoperative symptoms disappeared in all 5 patients. Control CAG confirmed persisting effect of PCI. According to exercise testing, physical tolerance increased from 68.5 ± 11.8 to 85.3 ± 12.4 Wt.

Conclusion: Simultaneous combined endovascular ASD closure and coronary stenting in adults is quite safe and effective and provides greater comfort for the patients by reducing their hospital stay. The performance of these procedures did not lead neither to significant increase of contrast medium expenditure, nor to the increase of patients.